IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Applicants:	Peter Fall et al.
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For:	Pedal Arrangement in a Vehicle Cab
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CERTIFICATE OF MAILING

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1/27/05
Date

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APPEAL BRIEF

Commissioner for Patents
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Pursuant to 37 C.F.R. §1.192, the applicants hereby respectfully submit the following Brief in support of their appeal. Pursuant to 37 C.F.R. §1.192(a) this brief is being filed in triplicate.

(1) Real Party in Interest

The real party in interest is Volvo Car Company, a Swedish corporation having a primary place of business in Sweden.

(2) Related Appeals and Interferences

There are no related appeals or interferences known to appellant, the appellant's legal representative, or assignee that will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

Claims 1-3, 5, 6, and 8-20 are pending and presently stand twice and finally rejected and constitute the subject matter of this appeal.

(4) Status of Amendments

An amendment after final was submitted to submit replacement drawing sheets. In the Office communication dated December 29, 2004, the Examiner indicated that these drawing corrections had been received and were now approved.

(5) Summary of Claimed Subject Matter

Entitled "Pedal Arrangement in a Vehicle Cab," the claimed invention may be largely described with reference to FIG. 1 reproduced below for the convenience of the reader.[A]

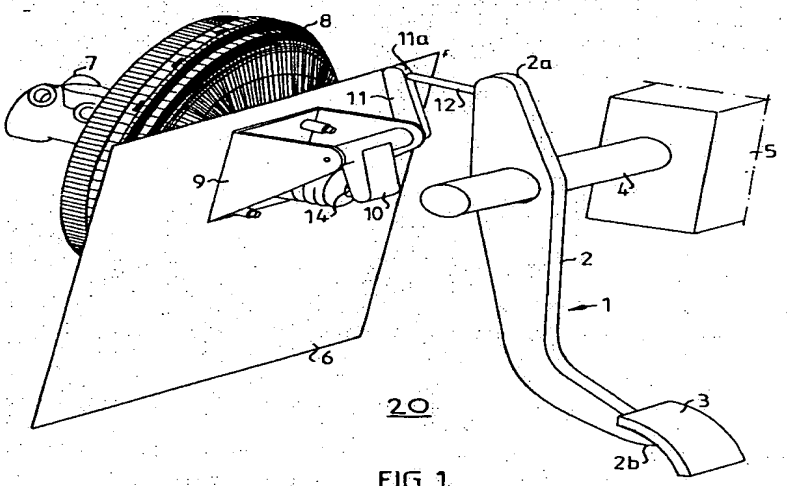


FIG. 1

A brake pedal (1) comprises a pedal arm (2) having an opening disposed through a middle portion thereof, which opening receives a shaft (4) that is fixed to a support element (5).[B] A lower end (2b) of the pedal arm (2) attaches to a foot plate (3) and an upper end (2a) of the pedal arm (2) couples to a flexible rod (12) such as a steel cable or a telescoping element.[C]

A FIG. 1 as reproduced comprises the amended view as appears in the amendment submitted after final.
B Page 3, lines 22-25 (paragraph 0011).
C Page 4, lines 1-7 (paragraph 0012).

A cowl wall (6) separates the cab space (20) from an engine compartment that houses a main brake cylinder (7) and a corresponding servo unit (8).[D] A bracket (9) mounts on the cowl wall (6) and a rocker arm (10) is journaled with respect to the bracket (9). This rocker arm (10) is rigidly joined at one end to a lever (11).[E] An opposing end of the lever (11) connects to the previously mentioned flexible rod (12).[F] An actuator rod (14) that interacts with the servo unit (8) is positioned to interact with the rocker arm (10).[G]

During normal use, the flexible rod (12) tends to remain under tensile force such that, when the foot plate (30) is urged towards the floor of the cab (20) by a driver the flexible rod (12) will move the upper end of the lever (11) inwards towards the cab (20). This in turn will urge the rocker arm (10) towards the actuator rod (14) to thereby cause the servo unit (8) to effect engagement of the main brake cylinder (7).[H]

In the event of a head-on collision that causes displacement of the cowl wall (6) and the servo unit (8) inwardly towards the cab (20), the flexible rod (12) is subjected to a compressive force. With a rigid rod, this force would tend to move the foot plate (3) again towards the floor of the cab (20) and thereby present a risk of trapping the driver's foot between the foot plate (3) and the floor of the cab (20). As this flexible rod (12) is flexible, however, relatively little compressive force will be transmitted before the flexible rod (12) bends. By bending, and hence effectively absorbing the movement vector that results in response to the dynamics of a head-on collision as described, the foot plate (3) presents a considerably reduced risk of trapping the driver's foot.[I]

(6) Grounds of Rejection to be Reviewed on Appeal

Claims 1, 2, 5, 6, 8, 10, 14, 16-20 are rejected as being anticipated by Wolpert (U.S. Patent No. 6,082,219) ("Wolpert"). Claim 15 is rejected under 35 U.S.C. 103(a) given Wolpert. Claims 1-3, 5, and 8-17 are rejected under 35 U.S.C. 103(a) given Bayer et al.

D Page 3, lines 25-28 (paragraph 0011).
E Page 3, lines 29-30 (paragraph 0011).
F Page 4, line 1 (paragraph 0012).
G Page 4, lines 8-10 (paragraph 0013).
H Page 4, lines 10-13 (paragraph 0013).
I Page 4, lines 13-20 (paragraph 0013).

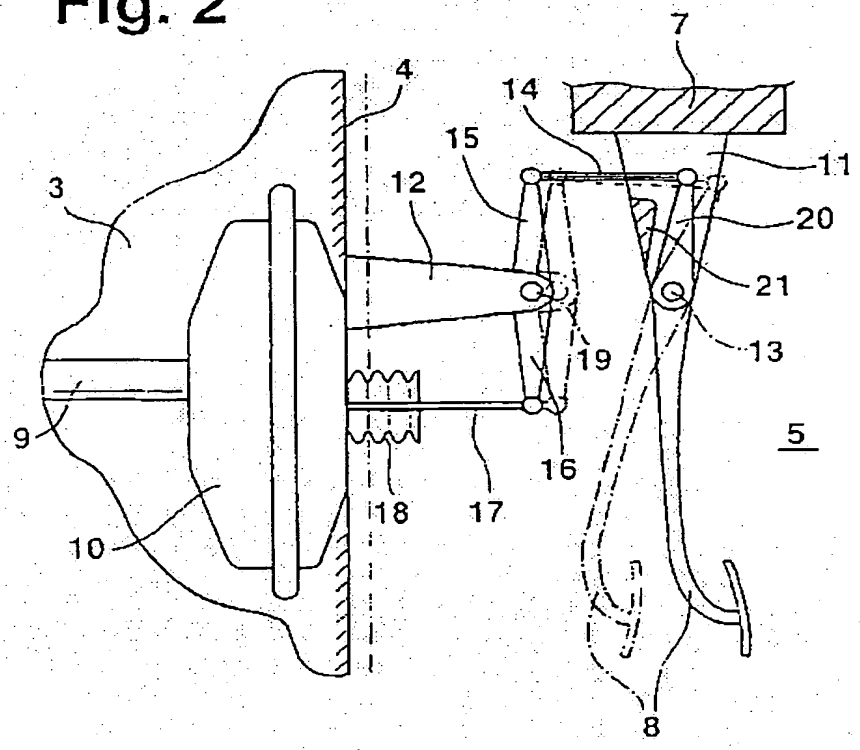
(German OS No. 31 40329) ("Bayer"). Claims 1-3, 5, and 8-17 are also rejected under 35 U.S.C. 103(a) given Bayer in view of Wolpert.

(7) Argument

Rejections under 35 U.S.C. 102

Claims 1, 2, 5, 6, 8, 10, 14, 16-20 are rejected as being anticipated by Wolpert. Wolpert can be briefly described and characterized as follows with reference to FIG. 2 from Wolpert, reproduced below for the convenience of the reader.

Fig. 2



Wolpert describes a pedal arrangement for use in a motor vehicle and in particular Wolpert seeks to provide a pedal arrangement for a brake pedal that will behave in a particular way to reduce the likelihood of injuries to a driver in the event of a head-on collision. This pedal arrangement comprises:

> [A] brake pedal 8 which can swivel about a swivelling axis 13 disposed on a first bearing block 11. . . . The brake pedal 8 also has a lever extension 20 which is molded in one piece and extends upwards to the opposite side from the swivelling axis 13. On

> the free end of the lever extension 20, a linking point is provided for a transmitting rod 14. . . . The transmitting rod 14 projects forward from the lever extension 20, in the longitudinal direction of the vehicle, toward the front wall 4. The transmitting rod is linked, by its opposite front end, to an upper lever arm 15 of a double-armed lever rocker 15, 16. . . . The lever rocker 15, 16 can swivel about a swivelling axis 19 on a second bearing block 12. . . . On its lower end, the lever arm 16 has a linking point [that attaches to] a plunger rod 17 [that] projects through the front wall 4 into a vehicle operating unit formed by a brake booster 10 . . . .[J]

During ordinary use, the transmitting rod 14 remains rigid and serves, when the brake pedal is pressed by the driver, to translate that movement into a corresponding horizontal force that ultimately causes the plunger rod 17 to move towards the engine compartment and interact with the brake operating unit.[K]

> If the passenger car 1 experiences a frontal impact and, because of the front impact load, the brake operating unit, together with the front wall 4, is displaced into the vehicle interior, then the lever rocker 15, 16 is necessarily displaced according to the representation shown by the broken line into the vehicle interior 5. **As a result, an axial displacement of the transmitting rod 14 (broken line representation) also takes place.** ***This axial displacement leads to a swivel movement of the brake pedal*** 8 because the transverse center console support 7 itself at least essentially maintains its position in the vehicle interior 5. The transverse center console support 7, therefore, is uncoupled from and unaffected by the intrusive movements of the front wall 4. Because of the bearing block 11, therefore, the support 7 forms a stationary swivelling point for the brake pedal 8. ***As the brake pedal 8 swivels, according to the representation by the broken line, the lower end of the brake pedal 8 is swivelled toward the front wall 4.*** The clearance in the foot space of the vehicle interior 5 is enlarged. As a result, the likelihood of injuries to the feet of a driver is reduced.[L]

J Wolpert at column 3, line 45–column 4, line 17.
K Wolpert at column 4, lines 28-32.
L Wolpert at column 4, lines 32-52; emphasis supplied.

Wolpert therefore seeks to address the same problem addressed by the applicant (i.e., protecting the feet of a driver in the event of a head-on collision) via entirely opposite approaches. Wolpert *wants* to cause pivoting movement of the brake pedal in a manner that effectively imitates braking action movement whereas the applicant seeks to *prevent* such movement. Wolpert achieves his desired ends by employing a rigid non-compressing transmitting rod 14, whereas the applicant employs a collapsible flexible rod 12.

The claims reflect this distinction. Claim 1, for example, specifies a "motion-transmitting element" wherein "the motion-transmitting element is disposed so that the distance between the motion-transmitting element's respective attachment points to the pedal arm and the lever is maintained at least substantially constant when there is a tensile force on the element and is allowed to be non-fixedly shortened when there is compressive force on the element."

This claim language stands in stark contrast to the teachings of Wolpert, whose transmitting rod 14 most assuredly is **not** allowed to become shortened when exposed to compressive force as this would prevent Wolpert's desired result of causing the brake pedal to pivot inwardly towards the firewall. Applicant's motion-transmitting element, on the other hand, is specifically required by the claims to become shorter in the face of compressive force, albeit in a temporary manner as mandated by the "non-fixedly" requirement.

The Examiner has offered the curious argument that "Applicant's motion transmitting element is substantially identical or similar to the one of Wolpert. Therefore, Wolpert's motion transmitting element is expected to behave similarly to the one of Applicant."[M] Plainly, this is not the case. The Applicant has explicitly described a flexible rod (such as a cable or telescoping member) whereas Wolpert has described only a rod with no reference to its being "flexible." More telling, Wolpert's described action in the event of a head-on collision plainly relies upon his translating rod 14 remaining rigid and uncompressed, as a shortening of its length will tend to defeat the resultant reaction he seeks to provide (i.e., a pivoting movement of the brake pedal in towards the firewall, a movement the applicant expressly seeks to prevent and avoid).

M Office Action mailed July 7, 2004 at page 19, lines 4-7.

This same limitation is also present in independent claims 8 and 18.[N] Therefore, as this limitation is clearly not only missing from Wolpert but in fact at odds with the entire point of Wolpert's teachings, the Applicant respectfully submits that claims 1, 2, 5, 6, 8, 10, 14, and 16-20 are not anticipated by Wolpert.

Rejections under 35 U.S.C. 103(a)

Claim 15 is rejected under 35 U.S.C. 103(a) given Wolpert.

Claim 15 is dependent upon independent claim 8, which claim is allowable as shown herein. Claim 15 further specifies that the motion-transmitting element is "welded" on at least one end thereof "between the brake pedal arm and the pedal actuated operating device." Wolpert is silent with respect to how his transmitting rod 14 couples to the lever extension 20 and lever rocker 15 of his embodiment. The illustration he provides, however, seems to suggest an attachment mechanism other than welding and his teachings with respect to movement of his transmitting rod 14 (see, for example, the changes in angle that occur with respect to the transmitting rod 14 as between the solid line and phantom line depictions thereof) further appear to confirm that interpretation. The applicant respectfully submits that, in the absence of any other teaching or motivation, there is nothing in Wolpert that renders the content of claim 15 obvious.

N Independent claim 8 provides for a "motion-transmitting element" that supports "tensile forces imposed thereon, and [that exhibits] non-fixedly collapsing under compressive forces imposed thereon." Independent claim 18 contains essentially the same limitation as claim 7 quoted above.

Claims 1-3, 5, and 8-17 are rejected under 35 U.S.C. 103(a) given Bayer.

Bayer can be briefly described and characterized as follows with reference to FIG. 1 from Bayer, reproduced below for the convenience of the reader.

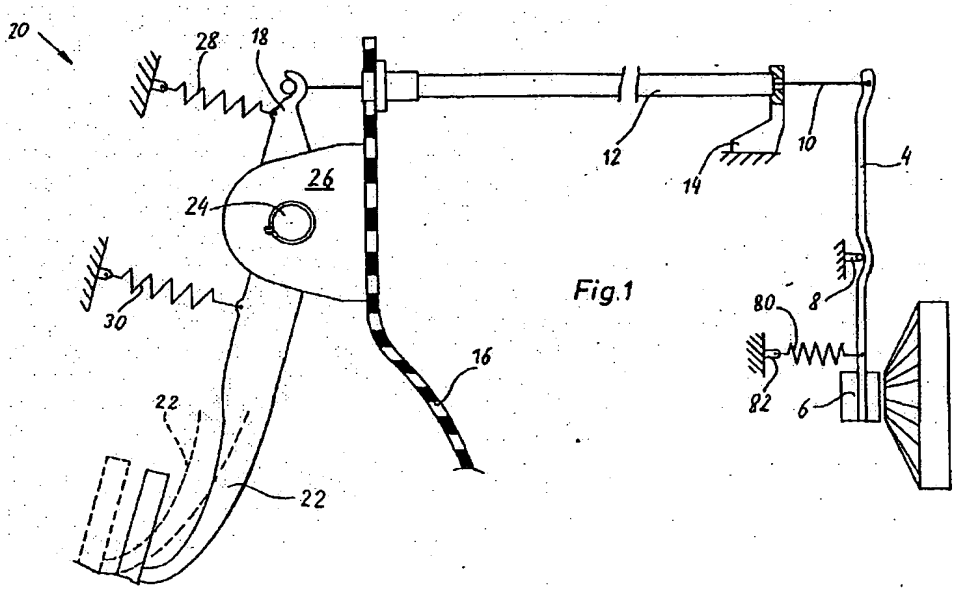
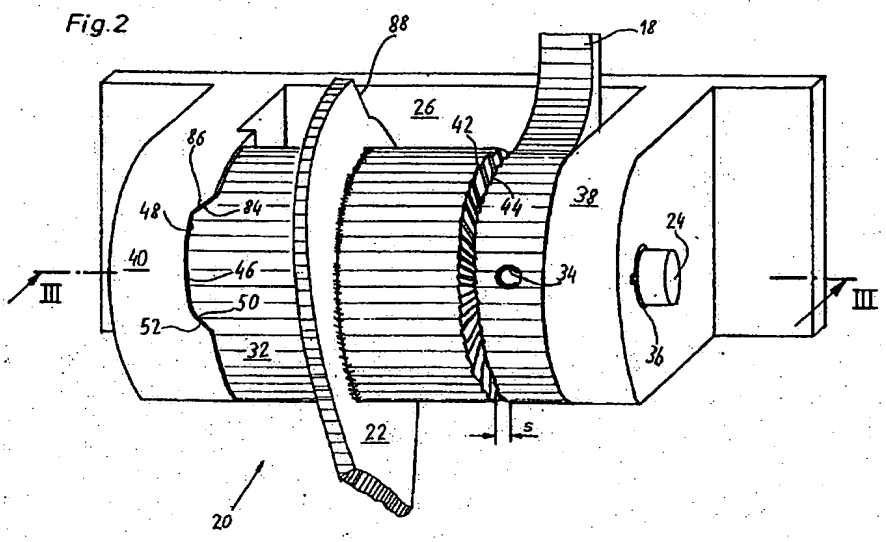


Fig.1

Bayer's "self-adjusting control device" comprises a pedal arrangement that operates in cooperation with a clutch mechanism. A clutch control device (20) includes a clutch pedal (22) that pivotally couples to a bolt (24) that is supported by a console (26) that attaches to a front wall (16) of a motor vehicle. A lever (18) also pivotally couples to the previously mentioned bolt (24) and links, at its distal end, to a control cable (10) that passes through the front wall (16) via a bushing (12) to a 2-armed clutch release lever (4). The latter clutch release lever (4) operates in conjunction with a thrust bearing (8) and serves to effect the operation of a clutch release bearing (6).

Bayer's control cable (10) comprises a flexible member. Bayer therefore provides a number of springs to ensure that appropriate tension is applied at various locations of his apparatus. A first spring (30) urges the clutch pedal (22) towards a so-called neutral position. A second spring (28) urges the lever (18) and hence the control cable (10) inwardly towards the cab of the vehicle. A third spring (80) urges the clutch release lever (4) towards a clutch-disengaged position and Bayer teaches that this third spring (80) should have a spring constant less than the second spring (28).

As mentioned above, Bayer provides for a bifurcated pedal and lever arrangement. This configuration appears more clearly with reference to Bayer's FIG. 2, reproduced below for the convenience of the reader.



As is more clearly depicted in this FIG. 2, Bayer's clutch pedal (22) has one end having a hole disposed therethrough to accommodate the bolt (24). So configured, this clutch pedal (22) can rotate about the bolt (24). The lever (18) that links at its distal end to the control cable (10) attaches at is opposing end to the bolt (24) via a clamping pin (34). So configured, and unlike the clutch pedal (22), this lever (18) will always rotate with the bolt (24). Bayer configures these elements (22 and 18) with teeth (42 and 44) and further provides for lateral movement opportunities such that sometimes the teeth (42 and 44) are engaged and sometimes they are not. When engaged, movement of the clutch pedal (22) will cause a concurrent movement of the lever (18). When not engaged, no such concurrent movement occurs.

The applicant's apparatus provides a motion-transmitting element that is disposed fully within the vehicle cab. By way of contrast, Bayer's control cable (10) traverses the front wall (16) that separates the cab of the vehicle from the engine compartment. The Examiner argues that it would be obvious to reposition Bayer's control device such that Bayer's control cable (10) is fully disposed within the vehicle cab. The applicant vigorously disputes this contention.

To do as the Examiner suggests (i.e., to place Bayer's control cable (10) fully within the vehicle cab) will also necessarily relocate Bayer's clutch release lever (4), the thrust bearing (8) and at least the clutch release bearing (6) into the cab as well. Numerous problems would attend such a redesign. As one example, where, exactly, would one place the thrust bearing (8). There is no existing and obviously available surface upon which it can be placed within the cab, given its orientation. As another example, why would any person of average skill in the art wish to locate such items as the clutch release lever and the clutch release bearing in the vehicle cab itself, as this would present both significant aesthetic issues and would further considerably reduce space in the vehicle cab for the driver's feet and legs. For just such reasons, items such as these are intentionally located within the engine compartment and are *not* located in the vehicle cab.

In the absence of any better motivation to make such a dramatic alteration to Bayer's design, the applicant respectfully submits that the Examiner's suggestion in this regard is more whimsical than motivationally sound.

Claim 1 includes the specific limitation that the "motion-transmitting element" be "disposed wholly within the cab space." As shown above, this constitutes a significant point of departure from the teachings of Bayer. The applicant therefore respectfully submits that claim 1 is not obvious in view of Bayer.

The two remaining independent claims, 8 and 18, also contain this same recitation and limitation. The applicant therefore respectfully submits that these claims are allowable on the same basis.

Another important difference exists that differentiates these claims from Bayer's teachings. The applicant's apparatus provides for a pedal arm that is journaled between its two ends, wherein a foot plate is attached at one end of the pedal arm and the motion-transmitting element is linked to the other end of the pedal arm. Bayer, on the other hand, provides instead for a clutch pedal (22) that has a foot pedal on one end and that is journaled at its opposing end. Bayer then also provides, as a separate distinct piece, a lever (18) that links to his control cable at one end and that couples at its opposing end to a bolt (24). Sometimes these elements interact with one another via a teeth arrangement, and sometimes they do not.

Claim 1 specifies provision of a "pedal arm having two ends, wherein the pedal arm is journaled in the support for pivoting about a pivot axis spaced between the two ends of the pedal arm." The claim further specifies that the foot plate is "fixed to a first portion of the pedal arm on one side of the pivot axis" and that the motion-transmitting element is "joined firstly to a second portion of the pedal arm on the other side of the pivot axis from the foot plate." Bayer makes no such teaching and in fact teaches an opposite configuration. The bifurcated structure presented by Bayer plays an important part in serving his overall intended operability. In a similar fashion, the integral nature of applicant's claimed pedal arm also serves the invention's purpose. To attempt to employ Bayer's bifurcated pedal arm in the applicant's context is to risk having the pedal arm not behave as desired in the event of a head-on collision. The applicant therefore respectfully submits that this pedal arm limitation comprises another important point of distinction that further separates the subject matter of claim 1 from the teachings of Bayer.

Independent claims 8 and 18 contain similar recitations regarding the pedal arm and therefore the applicant observes that these same arguments are applicable in their case as well.

Claims 1-3, 5, and 8-17 are rejected under 35 U.S.C. 103(a) given Bayer in view of Wolpert.

Both Bayer and Wolpert have been described and distinguished above. The Examiner seeks to extract from Wolpert the whole inclusion of Wolpert's transmitting rod in the vehicle cab and to combine that teaching with Bayer's embodiment. The applicant will again point out the same comments as were set forth above in this regard – a redesign of Bayer that results in placing Bayer's control cable wholly within the vehicle cab raises new unaddressed problems that deal both with practicality and aesthetics. This, in turn, would clearly discourage rather than encourage one skilled in the art from making such a selective combination. In addition, there are other specific differences between Bayer and Wolpert that would render such a pick-and-choose combination unobvious. For example, Bayer teaches use of a flexible cable while Wolpert requires use of a rigid, non-compressible rod. It stretches the point to suggest that what is good for one approach is also good for the other approach. Wolpert presents an embodiment that requires numerous journaled and pivoting

members and links, whereas Bayer presents an embodiment requiring a plurality of springs to properly bias his various elements. These overall settings and approaches are highly distinct from one another. Such differences, in turn, further render suspect any suggestion that one of average skill in the art will be somehow motivated to extract one isolated concept from one of these embodiments and transplant it into the other embodiment.

The remaining claims are ultimately dependent upon one of the independent claims discussed and distinguished above. Although these dependent claims introduce additional incremental patentable subject matter, for purposes of this appeal, the applicant respectfully submits that sufficient distinctions have been set forth above to establish the clear allowability of the independent claims, and hence of these dependent claims, over the prior art of record.

Summary

The applicant respectfully submits that numerous important differences exist as between the claims and the prior art references of record. The applicant therefore submits that claims 1-3, 5, 6, and 8-20 are allowable and may be passed to issuance.

(8) Claims Appendix

1. (Previously presented) Pedal arrangement in a vehicle cab space, comprising:

a support fixed in the cab space;

at least one pedal arm having two ends, wherein the pedal arm is journaled in the support for pivoting about a pivot axis spaced between the two ends of the pedal arm;

a foot plate fixed to a first portion of the pedal arm on one side of the pivot axis;

a motion-transmitting element disposed wholly within the cab space, wherein the motion-transmitting element is joined firstly to a second portion of the pedal arm on the other side of the pivot axis from the foot plate and wherein the motion-transmitting element is joined secondly to a pivotally mounted lever that is configured so that pivotation thereof actuates an operating device; and

wherein the motion-transmitting element is disposed so that the distance between the motion-transmitting element's respective attachment points to the pedal arm and the lever is maintained at least substantially constant when there is a tensile force on the element and is allowed to be non-fixedly shortened when there is compressive force on the element; and

wherein the motion-transmitting element is rigidly fixed to at least one of the pedal arm and the lever, and is pivotally joined to the other of the pedal arm and the lever.

2. (Previously presented) The pedal arrangement according to claim 1, wherein the motion-transmitting element is an elongated flexible element.

3. (Previously presented) The pedal arrangement according to claim 1, wherein the motion-transmitting element is a metal cable.

4. (Canceled)

5. (Previously presented) The pedal arrangement according to claim 1, wherein the motion-transmitting element is rigidly fixed both to the pedal arm and to the lever.

6. (Previously presented) The pedal arrangement according to claim 1, wherein the lever is joined to a rocker arm, which, when the lever is pivoted, acts on an actuator rod for a brake servo unit, which is located on the outside of an intermediate wall on the inside of which the support is located spaced from the intermediate wall.

7. (Canceled)

8. (Previously presented) A pedal arrangement in a vehicle cab space, said arrangement comprising:

a brake pedal arm pivotally connected to the vehicle at a pivot point located on the brake pedal arm, the pivot point being positioned between an upper end and a lower end of the brake pedal arm; and

a motion-transmitting element disposed wholly within the cab space and being connected between the brake pedal arm and a pedal actuated operating device, the motion-transmitting element supporting tensile forces imposed thereupon, and non-fixedly collapsing under compressive forces imposed thereupon.

9. (Previously presented) The brake pedal arrangement according to claim 8, wherein the motion-transmitting element comprises a cable.

10. (Previously presented) The brake pedal arrangement according to claim 8, wherein the motion-translating element comprises a bendable member.

11. (Previously presented) The brake pedal arrangement according to claim 8, wherein the motion-transmitting element comprises a telescoping member.

12. (Previously presented) The brake pedal arrangement according to claim 11, wherein the telescoping member is pivotally connected to the brake pedal arm.

13. (Previously presented) The brake pedal arrangement according to claim 11, wherein the telescoping member is welded at least at one end thereof between the brake pedal arm and the pedal actuated operating device.

14. (Previously presented) The brake pedal arrangement according to claim 8, wherein the motion-transmitting element is fixed at least at one end thereof between the brake pedal arm and the pedal actuated operating device.

15. (Previously presented) The brake pedal arrangement according to claim 8, wherein the motion-transmitting element is welded at least at one end thereof between the brake pedal arm and the pedal actuated operating device.

16. (Previously presented) The brake pedal arrangement according to claim 8, wherein the motion-transmitting element is pivotally connected at least at one end thereof between the brake pedal arm and the pedal actuated operating device.

17. (Previously presented) The brake pedal arrangement according to claim 8, wherein the pedal actuated operating device comprises a pressure actuated servo unit for affecting brake pressure application.

18. (Previously presented) A pedal arrangement for a vehicle cab space, said arrangement comprising:

a pivot axis connected to a support fixed within the vehicle cab space;

a pedal arm arranged to be pivotally connected to the pivot axis at a pivot point located on the pedal arm, the pivot point being positioned between an upper end and a lower end of the pedal arm;

a pedal actuated operating device including a bracket fixed within the vehicle cab space, a rocker arm journaled in the bracket and a lever arm connected to the rocker arm; and

a motion-transmitting element disposed wholly within the cab space and being connected between the pedal arm and the lever arm of the pedal actuated operating device, wherein the motion-transmitting element supports tensile forces imposed upon the motion-transmitting element, and wherein the motion-transmitting element non-fixedly collapses under compressive forces imposed upon the motion-transmitting element.

19. (Previously presented) The brake pedal arrangement according to claim 18, wherein the motion-transmitting element is selected from the group consisting of a cable, a bendable member or a telescoping member.

20. (Previously presented) The brake pedal arrangement according to claim 18, wherein the motion-transmitting element is rigidly fixed to at least one of the pedal arm and the lever arm, and is pivotally joined to the other of the pedal arm and the lever arm.

(9) Evidence Appendix

Not applicable.

(10) Related Proceeding Appendix

Not applicable.

Respectfully submitted,

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